

SEQUENCE LISTING

<110> Habener, Joel Zulewski, Hendrik Abraham, Elizabeth Vallejo, Mario	
<120> STEM CELLS OF THE ISLETS OF LANGERHANS AND THEIR USE	
<130> 17633/1230	
<140> US 09/731,261 <141> 2000-12-06	
<150> US 60/169,082 <151> 1999-12-06	
<150> US 60/215,109 <151> 2000-06-28	
<150> US 60/239,880 <151> 2000-10-06	
<160> 55	
<170> PatentIn version 3.1	
<210> 1 <211> 4854 <212> DNA <213> Homo sapiens	
<400> 1	
atggagggct gcatggggga ggagtcgttt cagatgtggg agctcaatcg gcgcctggag	60
gcctacctgg gccgggtcaa ggcgctggag gagcagaatg agctgctcag cgccggactc	120
ggggggctcc ggcgacaatc cgcggacacc tcctggcggg cgcatgccga cgacgagctg	180
gcggccctgc gtgcgctcgt tgaccaacgc tggcgggaga agcacgcggc cgaggtggcg	240
cgcgacaacc tggctgaaga gctggagggc gtggcaggcc gatgcgagca gctgcggctg	300
gcccgggagc ggacgacgga ggaggtagcc cgcaaccggc gcgccgtcga ggcagagaaa	360
tgcgcccggg cctggctgag tagccagggg gcagagctgg agcgcgagct agaggctcta	420
cgcgtggcgc acgaggagga gcgcgtcggt ctgaacgcgc aggctgcctg tgcccccgc	480
ctgcccgcgc cgccccggcc tcccgcgccg gccccggagg tagaggagct ggcaaggcga	540
ctgggcgagg cgtggcgcgg ggcagtgcgc ggctaccagg agcgcgtggc acacatggag	600
acgtcgctgg accagacccg cgagcgcctg gcccgggcgg tgcagggtgc ccgcgaggtc	660
cgcctggagc tgcagcagct ccaggctgag cgcggaggcc tcctggagcg cagggcagcg	720
ttggaacaga ggttggaggg ccgctggcag gagcggctgc gggctactga aaagttccag	780
ctggctgtgg aggccctgga gcaggagaaa cagggcctac agagccagat cgctcaggtc	840
ctggaaggtc ggcagcagct ggcgcacctc aagatgtccc tcagcctgga ggtggccacg	900
tacaggaccc tcctggaggc tgagaactcc cggctgcaaa cacctggcgg tggctccaag Page 1	960

acttccctca	gctttcagga	ccccaagctg	gagctgcaat	tccctaggac	cccagagggc	1020
cggcgtcttg	gatctttgct	cccagtcctg	agcccaactt	ccctcccctc	acccttgcct	1080
gctacccttg	agacacctgt	gccagccttt	cttaagaacc	aagaattcct	ccaggcccgt	1140
acccctacct	tggccagcac	ccccatcccc	cccacacctc	aggcaccctc	tcctgctgta	1200
gatgcagaga	tcagagccca	ggatgctcct	ctctctctgc	tccagacaca	gggtgggagg	1260
aaacaggctc	cagagcccct	gcgggctgaa	gccagggtgg	ccattcctgc	cagcgtcctg	1320
cctggaccag	aggagcctgg	gggccagcgg	caagaggcca	gtacaggcca	gtccccagag	1380
gaccatgcct	ccttggcacc	acccctcagc	cctgaccact	ccagtttaga	ggctaaggat	1440
ggagaatccg	gtgggtctag	agtgttcagc	atatgccgag	gggaaggtga	agggcaaatc	1500
tgggggttgg	tagagaaaga	aacagccata	gagggcaaag	tggtaagcag	cttgcagcag	1560
gaaatatggg	aagaagagga	tctaaacagg	aaggaaatcc	aggactccca	ggttcctttg	1620
gaaaaagaaa	ccctgaagtc	tctgggagag	gagattcaag	agtcactgaa	gactctggaa	1680
aaccagagcc	atgagacact	agaaagggag	aatcaagaat	gtccgaggtc	tttagaagaa	1740
gacttagaaa	cactaaaaag	tctagaaaag	gaaaataaaa	gagctattaa	aggatgtgga	1800
ggtagtgaga	cctctagaaa	aagaggctgt	aggcaactta	agcctacagg	aaaagaggac	1860
acacagacat	tgcaatccct	gcaaaaggag	aatcaagaac	taatgaaatc	tcttgaaggt	1920
aatctagaga	catttttatt	tccaggaacg	gaaaatcaag	aattagtaag	ttctctgcaa	1980
gagaacttag	agtcattgac	agctctggaa	aaggagaatc	aagagccact	gagatctcca	2040
gaagtagggg	atgaggaggc	actgagacct	ctgacaaagg	agaatcagga	acccctgagg	2100
tctcttgaag	atgagaacaa	agaggccttt	agatctctag	aaaaagagaa	ccaggagcca	2160
ctgaagactc	tagaagaaga	ggaccagagt	attgtgagac	ctctagaaac	agagaatcac	2220
aaatcactga	ggtctttaga	agaacaggac	caagagacat	tgagaactct	tgaaaaagag	2280
actcaacagc	gacggaggtc	tctaggggaa	caggatcaga	tgacattaag	acccccagaa	2340
aaagtggatc	tagaaccact	gaagtctctt	gaccaggaga	tagctagacc	tcttgaaaat	2400
gagaatcaag	agttcttaaa	gtcactcaaa	gaagagagcg	tagaggcagt	aaaatcttta	2460
gaaacagaga	tcctagaatc	actgaagtct	gcgggacaag	agaacctgga	aacactgaaa	2520
tctccagaaa	ctcaagcacc	actgtggact	ccagaagaaa	taaataaatc	agggggcaat	2580
gaatcctcta	gaaaaggaaa	ttcaagaacc	actggagtct	gtggaagtga	accaagagac	2640
attcagactc	ctggaagagg	agaatcagga	atcattgaga	tctctgggag	catggaacct	2700
ggagaatttg	agatctccag	aggagtagac	aaggaaagtc	aaaggaatct	ggaagaggaa	2760
gagaacctgg	gaaagggaga	gtaccaagag	tcactgaggt	ctctggagga	ggagggacag	2820
gagctgccgc	agtctgcaga	tgtgcagagg	tgggaagata Page		ggaccaagaa	2880

ctggctcagg	aaagccctcc	tgggatggct	ggagtggaaa	ataaggatga	ggcagagctg	2940
aatctaaggg	agcaggatgg	cttcactggg	aaggaggagg	tggtagagca	gggagagctg	3000
aatgccacag	aggaggtctg	gttcccaggc	gaggggcacc	cagagaaccc	tgagcccaaa	3060
gagcagagag	gcctggttga	gggagccagt	gtgaagggag	gggctgaggg	cctccaggac	3120
cctgaagggc	aatcacaaca	ggtggggacc	ccaggcctcc	aggctcccca	ggggctgcca	3180
gaggcgatag	agcccctggt	ggaagatgat	gtggccccag	ggggtgacca	agcctcccca	3240
gaggtcatgt	tggggtcaga	gcctgccatg	ggtgagtctg	ctgcgggagc	tgagccaggc	3300
ctggggcagg	gggtgggagg	gctgggggac	ccaggccatc	tgaccaggga	agaggtgatg	3360
gaaccacccc	tggaagagga	gagtttggag	gcaaagaggg	ttcagggctt	ggaagggcct	3420
agaaaggacc	tagaggaggc	aggtggtctg	gggacagagt	tctccgagct	gcctgggaag	3480
agcagagacc	cttgggagcc	tcccagggag	ggtagggagg	agtcagaggc	tgaggccccc	3540
aggggagcag	aggaggcgtt	ccctgctgag	accctgggcc	acactggaag	tgatgcccct	3600
tcaccttggc	ctctggggtc	agaggaagct	gaggaggatg	taccaccagt	gctggtctcc	3660
cccagcccaa	cgtacacccc	gatcctggaa	gatgcccctg	ggctccagcc	tcaggctgaa	3720
gggagtcagg	aggctagctg	gggggtgcag	gggagggctg	aagctgggaa	agtagagagc	3780
gagcaggagg	agttgggttc	tggggagatc	cccgagggcc	tccaggagga	aggggaggag	3840
agcagagaag	agagcgagga	ggatgagctc	ggggagaccc	ttccagactc	cactcccctg	3900
ggcttctacc	tcaggtcccc	cacctccccc	aggtggaccc	cactggagag	cagaggccac	3960
cccctcaagg	agactggaaa	ggagggctgg	gatcctgctg	tcctggcttc	cgagggcctt	4020
gaggaaccct	cagaaaagga	ggagggggag	gagggagaag	aggagtgtgg	ccgtgactct	4080
gacctgtcag	aagaatttga	ggacctgggg	actgaggcac	cttttcttcc	tggggtccct	4140
ggggaggtgg	cagaacctct	gggccaggtg	ccccagctgc	tactggatcc	tgcagcctgg	4200
gatcgagatg	gggagtctga	tgggtttgca	gatgaggaag	aaagtgggga	ggagggagag	4260
gaggatcagg	aggaggggag	ggagccaggg	gctgggcggt	gggggccagg	gtcttctgtt	4320
ggcagcctcc	aggccctgag	tagctcccag	agaggggaat	tcctggagtc	tgattctgta	4380
agtgtcagcg	tcccctggga	tgacagcttg	aggggtgcag	tggctggtgc	ccccaagact	4440
gccctggaaa	cggagtccca	ggacagtgct	gagccttctg	gctcagagga	agagtctgac	4500
cctgtttcct	tggagaggga	ggacaaagtc	cctggccctc	tagagatccc	cagtgggatg	4560
gaggatgcag	gcccaggggc	agacatcatt	ggtgttaatg	gccagggtcc	caacttggag	4620
gggaagtcac	agcatgtaaa	tgggggagta	atgaacgggc	tggagcagtc	tgaggaaagt	4680
ggggcaagga	atgcgctagt	ctctgaggga	gaccgaggga	gcccctttca	ggaggaggag	4740
gggagtgctc	tgaagaggtc	ttcggcaggg	gctcctgttc Page		gggtcagttc	4800

<210> 2

<211> 1618 <212> PRT

<213> Homo sapiens

<400> 2

Met Glu Gly Cys Met Gly Glu Glu Ser Phe Gln Met Trp Glu Leu Asn 1 10 15

Arg Arg Leu Glu Ala Tyr Leu Gly Arg Val Lys Ala Leu Glu Glu Gln 20 25 30

Asn Glu Leu Leu Ser Ala Gly Leu Gly Gly Leu Arg Arg Gln Ser Ala 35 40 45

Asp Thr Ser Trp Arg Ala His Ala Asp Asp Glu Leu Ala Ala Leu Arg 50 60

Ala Leu Val Asp Gln Arg Trp Arg Glu Lys His Ala Ala Glu Val Ala 65 70 75 80

Arg Asp Asn Leu Ala Glu Glu Leu Glu Gly Val Ala Gly Arg Cys Glu 85 90 95

Gln Leu Arg Leu Ala Arg Glu Arg Thr Thr Glu Glu Val Ala Arg Asn 100 105 110

Arg Arg Ala Val Glu Ala Glu Lys Cys Ala Arg Ala Trp Leu Ser Ser 115 120 125

Gln Gly Ala Glu Leu Glu Arg Glu Leu Glu Ala Leu Arg Val Ala His 130 140

Glu Glu Glu Arg Val Gly Leu Asn Ala Gln Ala Ala Cys Ala Pro Arg 145 150 155 160

Leu Pro Ala Pro Pro Arg Pro Pro Ala Pro Ala Pro Glu Val Glu Glu 165 170 175

Leu Ala Arg Arg Leu Gly Glu Ala Trp Arg Gly Ala Val Arg Gly Tyr 180 185 190

Gln Glu Arg Val Ala His Met Glu Thr Ser Leu Asp Gln Thr Arg Glu 195 200 205

Arg Leu Ala Arg Ala Val Gln Gly Ala Arg Glu Val Arg Leu Glu Leu Page 4 210

Gln Gln Leu Gln Ala Glu Arg Gly Gly Leu Leu Glu Arg Arg Ala Ala Leu Glu Gln Arg Leu Glu Gly Arg Trp Gln Glu Arg Leu Arg Ala Thr 245 250 255 Glu Lys Phe Gln Leu Ala Val Glu Ala Leu Glu Gln Glu Lys Gln Gly 260 265 270 Leu Gln Ser Gln Ile Ala Gln Val Leu Glu Gly Arg Gln Gln Leu Ala 275 280 285 His Leu Lys Met Ser Leu Ser Leu Glu Val Ala Thr Tyr Arg Thr Leu Leu Glu Ala Glu Asn Ser Arg Leu Gln Thr Pro Gly Gly Gly Ser Lys 310 315 320 Thr Ser Leu Ser Phe Gln Asp Pro Lys Leu Glu Leu Gln Phe Pro Arg Thr Pro Glu Gly Arg Arg Leu Gly Ser Leu Leu Pro Val Leu Ser Pro 340 345 350 Thr Ser Leu Pro Ser Pro Leu Pro Ala Thr Leu Glu Thr Pro Val Pro 360 Ala Phe Leu Lys Asn Gln Glu Phe Leu Gln Ala Arg Thr Pro Thr Leu 370 380 Ala Ser Thr Pro Ile Pro Pro Thr Pro Gln Ala Pro Ser Pro Ala Val 385 390 395 400 Asp Ala Glu Ile Arg Ala Gln Asp Ala Pro Leu Ser Leu Leu Gln Thr 405 410 415 Gln Gly Gly Arg Lys Gln Ala Pro Glu Pro Leu Arg Ala Glu Ala Arg 420 425 430 Val Ala Ile Pro Ala Ser Val Leu Pro Gly Pro Glu Glu Pro Gly Gly 435 440 445

Gln Arg Gln Glu Ala Ser Thr Gly Gln Ser Pro Glu Asp His Ala Ser 450 455 460

Leu Ala Pro Pro Leu Ser Pro Asp His Ser Ser Leu Glu Ala Lys Asp

Page 5

470 475 480

Gly Glu Ser Gly Gly Ser Arg Val Phe Ser Ile Cys Arg Gly Glu Gly 485 490 495

465

Glu Gly Gln Ile Trp Gly Leu Val Glu Lys Glu Thr Ala Ile Glu Gly 500 505 510

Lys Val Val Ser Ser Leu Gln Gln Glu Ile Trp Glu Glu Glu Asp Leu 515 520 525

Asn Arg Lys Glu Ile Gln Asp Ser Gln Val Pro Leu Glu Lys Glu Thr 530 540

Leu Lys Ser Leu Gly Glu Glu Ile Gln Glu Ser Leu Lys Thr Leu Glu 545 550 555 560

Asn Gln Ser His Glu Thr Leu Glu Arg Glu Asn Gln Glu Cys Pro Arg 565 570 575

Ser Leu Glu Asp Leu Glu Thr Leu Lys Ser Leu Glu Lys Glu Asn 580 590

Lys Arg Ala Ile Lys Gly Cys Gly Gly Ser Glu Thr Ser Arg Lys Arg 595 600 605

Gly Cys Arg Gln Leu Lys Pro Thr Gly Lys Glu Asp Thr Gln Thr Leu 610 620

Gln Ser Leu Gln Lys Glu Asn Gln Glu Leu Met Lys Ser Leu Glu Gly 625 630 635 640

Asn Leu Glu Thr Phe Leu Phe Pro Gly Thr Glu Asn Gln Glu Leu Val 645 650 655

Ser Ser Leu Gln Glu Asn Leu Glu Ser Leu Thr Ala Leu Glu Lys Glu 660 665 670

Asn Gln Glu Pro Leu Arg Ser Pro Glu Val Gly Asp Glu Glu Ala Leu 675 680 685

Arg Pro Leu Thr Lys Glu Asn Gln Glu Pro Leu Arg Ser Leu Glu Asp 690 695 700

Glu Asn Lys Glu Ala Phe Arg Ser Leu Glu Lys Glu Asn Gln Glu Pro
705 710 715 720

Leu Lys Thr Leu Glu Glu Glu Asp Gln Ser Ile Val Arg Pro Leu Glu Page 6 725 730 735

Thr Glu Asn His Lys Ser Leu Arg Ser Leu Glu Glu Gln Asp Gln Glu 740 745 750 Thr Leu Arg Thr Leu Glu Lys Glu Thr Gln Gln Arg Arg Ser Leu 755 760 765 Gly Glu Gln Asp Gln Met Thr Leu Arg Pro Pro Glu Lys Val Asp Leu 770 775 780 Glu Pro Leu Lys Ser Leu Asp Gln Glu Ile Ala Arg Pro Leu Glu Asn 785 790 795 800 Glu Asn Gln Glu Phe Leu Lys Ser Leu Lys Glu Glu Ser Val Glu Ala 805 810 815 Val Lys Ser Leu Glu Thr Glu Ile Leu Glu Ser Leu Lys Ser Ala Gly 820 825 830 Gln Glu Asn Leu Glu Thr Leu Lys Ser Pro Glu Thr Gln Ala Pro Leu 835 840 845 Trp Thr Pro Glu Glu Ile Asn Lys Ser Gly Gly Asn Glu Ser Ser Arg 850 855 860 Lys Gly Asn Ser Arg Thr Thr Gly Val Cys Gly Ser Glu Pro Arg Asp 865 870 875 880 Ile Gln Thr Pro Gly Arg Gly Glu Ser Gly Ile Ile Glu Ile Ser Gly 885 890 895 Ser Met Glu Pro Gly Glu Phe Glu Ile Ser Arg Gly Val Asp Lys Glu 900 905 910 Ser Gln Arg Asn Leu Glu Glu Glu Asn Leu Gly Lys Gly Glu Tyr 915 920 925 Gln Glu Ser Leu Arg Ser Leu Glu Glu Glu Gly Gln Glu Leu Pro Gln 930 935 940 Leu Ala Gln Glu Ser Pro Pro Gly Met Ala Gly Val Glu Asn Lys Asp 965 970 975 Glu Ala Glu Leu Asn Leu Arg Glu Gln Asp Gly Phe Thr Gly Lys Glu Page 7

980 985 990

Glu Val Val Glu Gln Gly Glu Leu Asn Ala Thr Glu Glu Val Trp Phe Pro Gly Glu Gly His Pro Glu Asn Pro Glu Pro Lys Glu Gln Arg Gly Leu Val Glu Gly Ala Ser Val Lys Gly Gly Ala Glu Gly Leu Gln Asp Pro Glu Gly Gln Ser Gln Gln Val Gly Thr Pro Gly Leu 1040 1050 Gln Ala Pro Gln Gly Leu Pro Glu Ala Ile Glu Pro Leu Val Glu 1055 Asp Asp Val Ala Pro Gly Gly Asp Gln Ala Ser Pro Glu Val Met 1070 1080 Leu Gly Ser Glu Pro Ala Met Gly Glu Ser Ala Ala Gly Ala Glu Pro Gly Leu Gly Gln Gly Val Gly Gly Leu Gly Asp Pro Gly His 1100 1110 Leu Thr Arg Glu Glu Val Met Glu Pro Pro Leu Glu Glu Glu Ser Leu Glu Ala Lys Arg Val Gln Gly Leu Glu Gly Pro Arg Lys Asp Leu Glu Glu Ala Gly Gly Leu Gly Thr Glu Phe Ser Glu Leu Pro Gly Lys Ser Arg Asp Pro Trp Glu Pro Pro Arg Glu Gly Arg Glu Glu Ser Glu Ala Glu Ala Pro Arg Gly Ala Glu Glu Ala Phe Pro 1175 1180 Ala Glu Thr Leu Gly His Thr Gly Ser Asp Ala Pro Ser Pro Trp 1190 Pro Leu Gly Ser Glu Glu Ala Glu Glu Asp Val Pro Pro Val Leu 1205 1210 Val Ser Pro Ser Pro Thr Tyr Thr Pro Ile Leu Glu Asp Ala Pro Page 8

1220 1225 1230

Gly Leu Gln Pro Gln Ala Glu Gly Ser Gln Glu Ala Ser Trp Gly Val Gln Gly Arg Ala Glu Ala Gly Lys Val Glu Ser Glu Gln Glu Glu Leu Gly Ser Gly Glu Ile Pro Glu Gly Leu Gln Glu Gly Glu Glu Ser Arg Glu Glu Ser Glu Glu Asp Glu Leu Gly Glu Thr 1280 1290 Leu Pro Asp Ser Thr Pro Leu Gly Phe Tyr Leu Arg Ser Pro Thr **13**05 1300 Ser Pro Arg Trp Thr Pro Leu Glu Ser Arg Gly His Pro Leu Lys 1310 1315 1320 Glu Thr Gly Lys Glu Gly Trp Asp Pro Ala Val Leu Ala Ser Glu 1325 1330 1335 Gly Leu Glu Glu Pro Ser Glu Lys Glu Glu Gly Glu Glu Gly Glu Glu Glu Cys Gly Arg Asp Ser Asp Leu Ser Glu Glu Phe Glu Asp Leu Gly Thr Glu Ala Pro Phe Leu Pro Gly Val Pro Gly Glu Val Ala Glu Pro Leu Gly Gln Val Pro Gln Leu Leu Leu Asp Pro Ala Ala Trp Asp Arg Asp Gly Glu Ser Asp Gly Phe Ala Asp Glu Glu 1400 Glu Ser Gly Glu Glu Glu Glu Asp Gln Glu Gly Arg Glu 1415 1420 1425 1425 1420 Pro Gly Ala Gly Arg Trp Gly Pro Gly Ser Ser Val Gly Ser Leu 1430 1440 Gln Ala Leu Ser Ser Gln Arg Gly Glu Phe Leu Glu Ser Asp 1445 1450 Ser Val Ser Val Ser Val Pro Trp Asp Asp Ser Leu Arg Gly Ala Page 9

1460	1465	1470
Val Ala Gly Ala Pro Lys	Thr Ala Leu Glu Thr	Glu Ser Gln Asp
1475	1480	1485
Ser Ala Glu Pro Ser Gly	Ser Glu Glu Glu Ser	Asp Pro Val Ser
1490	1495	1500
Leu Glu Arg Glu Asp Lys	Val Pro Gly Pro Leu	Glu Ile Pro Ser
1505	1510	1515
Gly Met Glu Asp Ala Gly	Pro Gly Ala Asp Ile	Ile Gly Val Asn
1520	1525	1530
Gly Gln Gly Pro Asn Leu	Glu Gly Lys Ser Gln	His Val Asn Gly
1535	1540	1545
Gly Val Met Asn Gly Leu	Glu Gln Ser Glu Glu	Ser Gly Ala Arg
1550	1555	1560
Asn Ala Leu Val Ser Glu	Gly Asp Arg Gly Ser	Pro Phe Gln Glu
1565	1570	1575
Glu Glu Gly Ser Ala Leu	Lys Arg Ser Ser Ala	Gly Ala Pro Val
1580	1585	1590
His Leu Gly Gln Gly Gln	Phe Leu Lys Phe Thr	Gln Arg Glu Gly
1595	1600	1605
Asp Arg Glu Ser Trp Ser 1610	Ser Gly Glu Asp 1615	
<210> 3 <211> 20 <212> DNA <213> Artificial Sequence	ce	
<220> <223> Primer		
<400> 3 gcggggcggt gcgtgactac		20
<210> 4 <211> 24 <212> DNA <213> Artificial Sequence	ce	
<220> <223> Primer		
<400> 4	Page 10	

Page 10

ayycaa	gggg gaagagaagg atgt	24
<210> <211> <212> <213>	5 35 DNA Artificial Sequence	
<220> <223>	Primer	
	5 aagc cgaatttcct tgggatacca gagga	35
<210> <211> <212> <213>		
<220> <223>	Primer	
<400> acagcc	6 agta cttcaagacc	20
<210> <211> <212> <213>	7 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ctgtgt	7 cagc acgcacgtta	20
	8 30 DNA Artificial Sequence	
<220> <223>	Primer	
<400> tggatte	8 ccac accaggcatt gaccatgcca	30
<210> <211> <212> <213>	DNA	
<220> <223>	Primer	
<400> cagcgt1	9 tgga gagtccaaat	20
<210s	10	

<211> <212> <213>	20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ttaaac	10 tcct gtggggttgg	20
<210> <211> <212> <213>	11 37 DNA Artificial Sequence	
<220> <223>	Primer	
<400> aaacca	11 gcag cggatctcag tggtgtggaa cgatgat	37
	12 19 DNA Artificial Sequence	
<220> <223>	Primer	
<400> atcact	12 ggag cagggaagt	19
<210> <211> <212> <213>	13 19 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gctact	13 acgt ttcttatct	19
<210> <211> <212> <213>	14 19 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gcgtgg	14 aaaa gccagtggg	19
<210><211><211><212><213>	15 18 DNA Artificial Sequence	

<220> <223>	Primer	
	15 gaat tcctggag	18
<210> <211> <212> <213>	16 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ctgagg	16 acca ggactctcta	20
<210> <211> <212> <213>	17 31 DNA Artificial Sequence	
<220> <223>	Primer	
	17 cggg ctggagcagt ctgaggaaag t	31
<210> <211> <212> <213>		
<220> <223>	Primer	
	18 gcgc gcccagcatt	20
<210> <211> <212> <213>	19 20 DNA Artificial Sequence	
<220> <223>	Primer	
	19 cctg tccctcgagc	20
<210> <211> <212> <213>	20 30 DNA Artificial Sequence .	
<220> <223>	Primer	
<400>	20	

aaccac	gayy ayyaaaccay tacyctyayy	30
<210> <211> <212> <213>	21 20 DNA Artificial Sequence	
<220> <223>	Primer	
	21 actc caggcgtgcc	20
<210> <211> <212> <213>		
<220> <223>	Primer	
	22 gaat tccttggcag	20
<210> <211> <212> <213>	30	
<220> <223>	Primer	
	23 gaat ttgagagaca tgctgaaggg	30
<210> <211> <212> <213>		
<220> <223>	Primer	
<400> agaaca	24 gcac gtacacagcc	20
<210> <211> <212> <213>		
<220> <223>	Primer	
<400> cctccg	25 aaga aacagcaaga	20
<210>	26	

<211> <212> <213>	30 DNA Artificial Sequence	
<220> <223>	Primer	
	26 ttca cagcagaact aacacacggg	30
<210> <211> <212> <213>	27 20 DNA Artificial Sequence	
<220> <223>	Primer	
	27 ctgc catcaatgtg	20
<210> <211> <212> <213>	28 20 DNA Artificial Sequence	
<220> <223>	Primer	
	28 tgtg aataccacct	20
<210> <211> <212> <213>	30	
<220> <223>	Primer	
	29 agct gcatgggctc acaactgagg	30
	30 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gacttt	30 ccag cagtcccata	20
<210> <211> <212> <213>		

<220> <223>	Primer	
<400> gtttac	31 ttcc tgcagggaac	20
	32 31 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ttgcac	32 tgga gaaggattac gtggcgttct a	31
<210> <211> <212> <213>	33 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> tgaagg	33 cgag aaggtgttcc	20
<210> <211> <212> <213>	34 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ttcgaga	34 atac aggcagatat	20
<210> <211> <212> <213>	35 30 DNA Artificial Sequence	
<220> <223>	Primer	
<400> agttaga	35 actt ttatgtcctg cctgtgctca	30
<210> <211> <212> <213>	36 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400>	36	

cttcag	gctg caccaagtgt	20
<210> <211> <212> <213>	37 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gttgac	37 cata gtcaggctgg	20
<210> <211> <212> <213>	38 30 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gtcaga	38 tgtg aagatggcca cagacccaga	30
<210> <211> <212> <213>	39 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gcatca	39 aatg tcagccctgg	20
<210> <211> <212> <213>	40 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> caacgc	40 tgac atggaattcc	20
<210> <211> <212> <213>		
<220> <223>	Primer	
<400> tcgagg	41 tctc atggatcata cagaatcagg	30
<210>	42	

<211> <212> <213>		
<220> <223>	Primer	
<400> caatgt	42 gaga tgtctccagc	20
<210> <211> <212> <213>	43 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ccttgt	43 agat tgcaggcaga	20
<210> <211> <212> <213>	44 30 DNA Artificial Sequence	
<220> <223>	Primer	
<400> ggactc	44 ccat ccagtgtctc cagaagtgat	30
<210> <211> <212> <213>	45 20 DNA Artificial Sequence	
<220> <223>	Primer	
<400> gagtag	45 cagc tcagactgcc	20
<210> <211> <212> <213>	20	
<220> <223>	Primer	
	46 ctct gggagctcct	20
<211> <212>	47 30 DNA Artificial Sequence	

<220> <223>	Primer	
	47 actc agactacgtg cacctctgca	30
<210> <211> <212> <213>	48 20 DNA Artificial Sequence	
<220> <223>	Primer	
	48 gctc aactaatcac	20
<210> <211> <212> <213>	49 20 DNA Artificial Sequence	
<220> <223>	Primer	
	49 gcac aagtcccact	20
	50 30 DNA Artificial Sequence	
<220> <223>	Primer	
	50 attc ttattagtca gattattggt	30
<210> <211> <212> <213>	51 16 DNA Artificial Sequence	
<220> <223>	Primer	
<400> aggctt	51 cttc tacaca	16
<210> <211> <212> <213>	52 16 DNA Artificial Sequence	
<220> <223>	Primer	
<400>	52	

caggctgcct gcacca			
<210> <211> <212> <213>	53 16 DNA Artificial Sequence		
<220> <223>	Primer		
<400> aggcag	53 agga cctgca	16	
<210> <211> <212> <213>	54 10 PRT Artificial Sequence		
<220> <223>	Primer		
<400>	54		
Cys Phe Ile Ala Trp Leu Val Lys Gly Arg 1 5 10			
<210> <211> <212> <213>	55 24 DNA Artificial Sequence		
<220> <223>	Primer		
<400>	55 tgag ggttgaggtt tgtg	24	